

REMARKS

To avoid the necessity of an Appeal, Applicants respectfully request reconsideration and allowance of the present application based on the following remarks. Claims 1-37 are pending in the application.

Claim Rejections Under 35 U.S.C. § 102

Claims 1-37 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,341,145 to Hioe et al ("*Hioe*").

A cited prior art reference anticipates a claimed invention under 35 U.S.C. § 102 only if every element of the claimed invention is identically shown in the single reference, arranged as they are in the claims. MPEP § 2131; *In re Bond*, 910 F.2d 831, 832, 15 USPQ 2d 1566, 1567 (Fed. Cir. 1990). Each and every limitation of the claimed invention must be found in the single cited prior art reference. *In re Donohue*, 766 F.2d 531, 534, 226 USPQ 619, 621 (Fed. Cir. 1985).

As set forth more fully below, Applicants respectfully traverse the § 102 rejection of the claims because every element of the amended claimed invention is not identically shown in *Hioe*, and/or arranged as they are required in independent claims 1, 2 and 16.

Hioe Does Not Explicitly or Inherently Include a Transmit Buffer or Receive Buffer As Required By Independent Claims 1 and 16

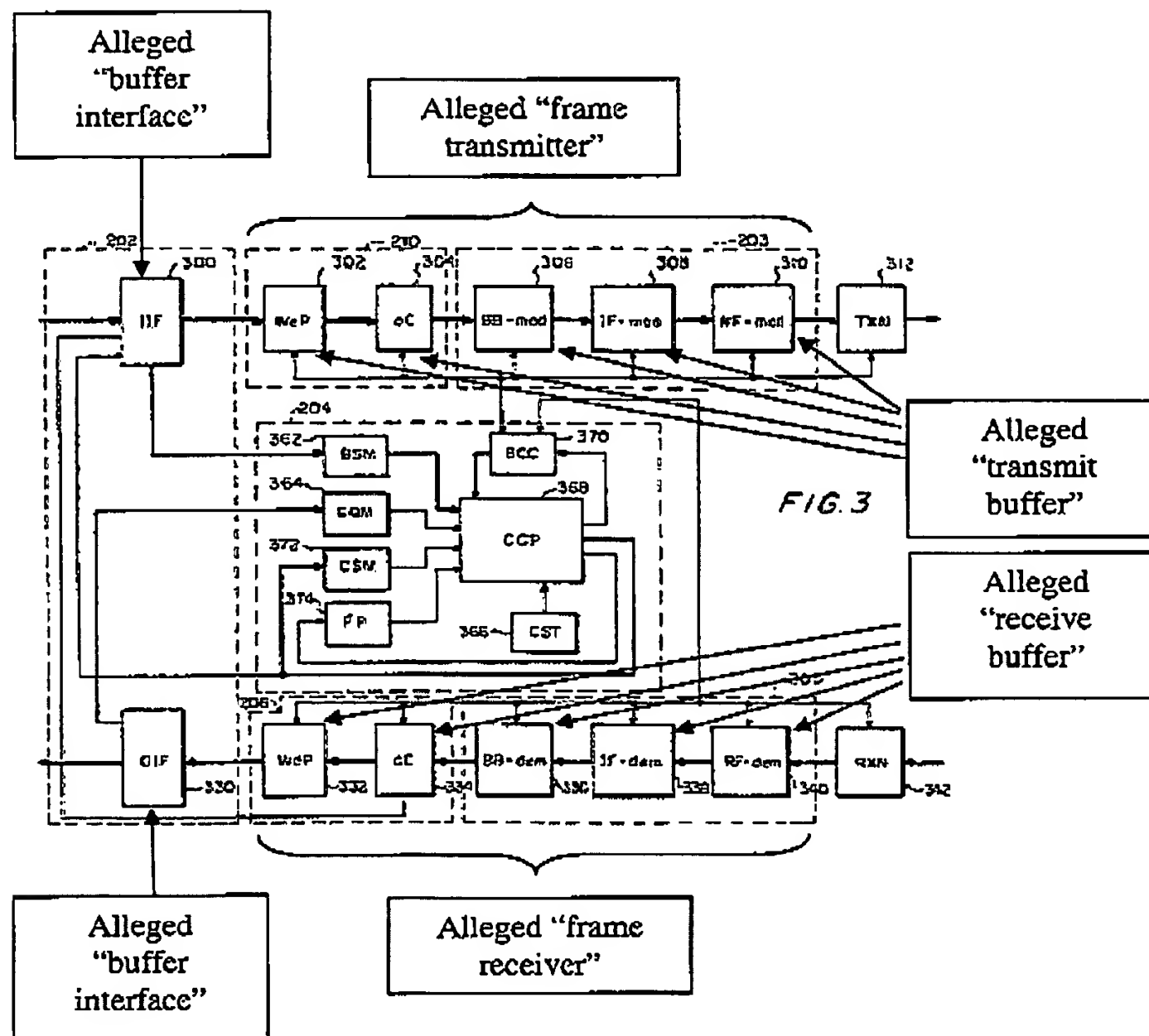
Independent claims 1 and 16 both require:

a buffer interface that sends frames to the host central processing unit and receives frames from the host central processing unit;

a frame transmitter that includes a transmit buffer that receives frames from the buffer interface and sends frames to the network;

a frame receiver that includes a receive buffer that receives frames from the network and sends frames to the buffer interface . .

In the Office Action, the Examiner points to certain components illustrated in FIGs. 2 and 3 of *Hioe* that allegedly meet these elements.¹ For convenience, FIG. 3 of *Hioe* is reproduced below, with the Office Action's allegations juxtaposed thereon.



¹ The Office Action repeatedly relies on "*Hioe* reference entirety." Applicants respectfully submit that this reliance does not provide a license to re-arrange or loosely interpret *Hioe* to include or disclose components that are not explicitly present or not arranged as required by the claims.

Applicants respectfully submit that *Hioe*'s modulation section 203 and packet processing section 210 do not include a "transmit buffer," and that *Hioe*'s demodulation section 205 and error detection/correction section 206 do not include a "receive buffer" as alleged in the Office Action, and as required by independent claims 1 and 16.

With respect to elements 302-310 of packet processing section 210 and modulation section 203, *Hioe* clearly teaches, at col. 6 line 54 to col. 7 line 9, that:

In the input interface 300, data are arranged in order of arrival for each category, referring to the header information, and temporarily held. The data from the input interface 300 is transmitted to a wireless-packeting block (WeP) 302 from the input interface 300 at a predetermined timing and incorporated into a packet for radio transmission. Coding for radio transmission, error control coding, and encryption if necessary are applied to the packeted data by an encoding block (eC) 304. Then, a digital signal is converted into an analog signal by a baseband modulation block (BB-mod) 306 and an analog waveform is generated. The generated analog signal is modulated into an intermediate frequency band by an intermediate frequency modulation block (IF-mod) 308 and at the same time, the frequency components other than the occupied narrow frequency band are suppressed. An intermediate frequency signal is upconverted to a radio frequency by a radio frequency modulation block (RF-mod) 310 where the signal power is amplified up to the transmission level and the frequency components other than the occupied wide frequency band are suppressed. The amplified signal is radiated from a transmission antenna (TXN) 312.

Clearly, *Hioe*'s elements 302-310 do not buffer frames. Rather, they receive data from a buffer (i.e. input interface 300, the alleged "buffer interface") at a predetermined timing and convert the data into analog waveforms. Elements 306-310 all produce analog waveforms and thus cannot store or buffer frames at all. And elements 302 and 304 work at a predetermined timing and thus do not need or allow for any buffering operation. The overall operation of

More particularly, none of the following elements in *Hioe* relied upon by the Office Action would be considered a buffer by those skilled in the art:

- Wireless-packeting (WeP) block 302: *Hioe* teaches that this block incorporates data into a packet for radio transmission. One skilled in the art would not consider a wireless-packeting block to be a buffer.
- Encoding (cC) block 304: *Hioe* teaches that this block applies coding for radio transmission, error control coding and encryption if necessary. One skilled in the art would not consider an encoding block to be a buffer.
- Baseband modulation (BB-mod) block 306: *Hioe* teaches that this block converts a digital signal to an analog waveform. One skilled in the art would not consider a baseband modulation block to be a buffer.
- Intermediate frequency modulation (IF-mod) block 308: *Hioe* teaches that this block modulates a generated waveform into an intermediate frequency band. One skilled in the art would not consider an intermediate frequency block to be a buffer.
- Radio frequency modulation (RF-mod) block 310: *Hioe* teaches that this block upconverts the intermediate frequency signal to a radio frequency. One skilled in the art would not consider a Radio frequency modulation block to be a buffer.

Because *Hioe* does not expressly teach or disclose a buffer that is included in the alleged “frame transmitter” (sections 203 and 210), *Hioe* does not explicitly meet the limitations of claims 1 and 16, and the rejection of the claims should be withdrawn.

Although the Office Action does not rely on the doctrine of inherency, a rejection based on inherency would also be flawed. As set forth in MPEP § 2112, the Examiner must provide a rationale or evidence tending to show inherency. Such rationale or evidence must “make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill.” *In re Robertson*, 169 F.3d 743, 745, 49 U.S.P.Q.2d 1949, 1950-51 (Fed. Cir. 1999). The Office Action does not include any such rationale or evidence. Moreover, Applicants have pointed out how, by operating at a predetermined timing in which data moves peristaltically through *Hioe*’s transmit chain, a buffer is not necessary in modulation section 203 or packet processing section 210. Accordingly, a rejection based on inherency would be improper.

The same reasoning above with respect to the claimed transmit buffer also applies to the claimed receive buffer, and so *Hioe* also fails to expressly or inherently a receive buffer as required by the claims.

For at least these reasons, Applicants submit that claims 1 and 16 patentably define over *Hioe* and the § 102 rejection of these claims, as well as claims 3-15, 32 and 35 that depend from claim 1, and claims 17-23, 33 and 36 that depend from 16, should be withdrawn.

Hioe Does Not Explicitly or Inherently Include an Encryption/Decryption Block As Further Required By Independent Claim 1

In addition to the missing subject matter that is common with claim 16 as set forth above, claim 1 requires an encryption / decryption block that "sends and receives frames between the transmit buffer and the receive buffer."

This subject matter is not taught or suggested by *Hioe*, at least because *Hioe* does not disclose or suggest a transmit buffer or receive buffer as required by claim 1. Specifically, encryption block 304 (part of the alleged "encryption/decryption block") receives data from WeP block 302 and sends data to BB-mod block 306, neither of which would be considered a buffer by those skilled in the art. Decryption block 334 receives data from BB-dem block 336 and sends data to WdP block 332, neither of which would be considered a buffer by those skilled in the art. Accordingly, *Hioe* cannot possibly include an encryption / decryption block that "sends and receives frames between the transmit buffer and the receive buffer."

Moreover, the Office Action alleges that elements 304 and 334 together comprise the claimed encryption/decryption block. However, there is no single element in *Hioe* that both encrypts and decrypts frames. Rather, *Hioe* teaches separate blocks 304 and 334 for encryption and decryption, respectively. The Office Action has re-arranged the blocks disclosed by *Hioe*, which is not permitted for a rejection based on anticipation. Further, any rejection based on inherency requires evidence or rationale in support thereof, neither of which are present in the Office Action.

Accordingly, independent claim 1 further patentably defines over *Hioe* for at least this additional reason, and the § 102 rejection of the claim should be withdrawn.

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Hioe Does Not Disclose Implementing Time-Critical Processing Functions Using Hardware Operations As Required By Independent Claim 2

Independent claim 2 requires

processing, using operations implemented by hardware in an integrated circuit, the incoming frame for time-critical functions, the time critical functions including:

- sending an outgoing frame corresponding to the incoming frame to the host;
- formulating time-critical responses;
- accumulating statistics; and
- updating a media access control state.

Independent claim 2 requires that the method include specifically enumerated time-critical functions that are implemented as hardware operations in an integrated circuit. In contrast to the explicit requirements of independent claim 2, the Office Action relies on passages of *Hioe* that describe operations of a "channel control processor" (CCP) 368, which operations are clearly software executing on a processor.

The Office Action responds to this irrefutable evidence by stating (page 14) that "the specification does not disclose [that this limitation] is a novel and unobvious feature."

Meanwhile, a rejection based on § 102 requires the Examiner to compare the limitations of the claim to the cited reference. If a limitation is not found in the reference, the rejection is improper and should be withdrawn. It is not appropriate to conjecture about what the specification opines or does not opine about the novelty of a particular limitation of a claim, much less to base a rejection on such conjecture.

Moreover, quite contrary to the Office Action's allegation, the application repeatedly refers to the hardware implementation of time-critical functions as an important feature of the invention. See, for example, the title of the invention: **HARDWARE MAC**.

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Because *Hioe* does not teach, and in fact teaches away from, the invention required in independent claim 2, including the explicit limitation of performing time-critical functions ~~that~~ are implemented as hardware operations in an integrated circuit, the § 102 rejection of this claim, along with claims 24-31 that depend therefrom, should be withdrawn.

Hioe Does Not Disclose A Transmit or Receive State Machine As Required By Dependent Claims 3, 10 and 17

Claims 3, 10 and 17 depend from independent claims 1 and 16. These claims patentably define over *Hioe* at least by virtue of their dependence on claims 1 and 16. Moreover, each of these claims recite additional subject matter that further patentably distinguish them from *Hioe*.

The Office Action alleges that the claimed frame transmitter is allegedly met by packet processing section 210 and modulation section 203, and the claimed frame receiver is allegedly met by error detection/correction section 206 and demodulation section 205. Meanwhile, each of these claims further limit the structure of the claimed frame transmitter and receiver to even further distinguish them from *Hioe*'s structure.

Specifically, claims 3, 10 and 17 require that the frame transmitter includes a transmit state machine, and the frame receiver includes a receive state machine. The Office Action alleges that these elements are met by transmit antenna 312 and reception antenna 342, respectively. However, it is submitted that one skilled in the art would not consider an antenna to be equivalent to a state machine.

For at least these additional reasons, claims 3, 10 and 17 further patentably define over *Hioe* and the rejections thereof should be withdrawn.

The Office Action alleges that the claimed frame receiver is allegedly met by error detection/correction section 206 and demodulation section 205. Meanwhile, each of these claims further limit the structure of the claimed frame receiver to even further distinguish them from *Hioe*'s structure.

Specifically, claims 5, 12 and 19 require that the frame receiver includes a retry operations block for determining when retransmission of a particular frame is needed. The Office Action points to col. 9, lines 41-62, and col. 10, lines 23-30, which refer to operations of control section 360 and wireless packeting block 302, not the alleged frame receiver (demodulation block 205 and error detection/correction block 206). Accordingly, even if, *arguendo*, these operations correspond to the claimed retry operations block, they are not included in the alleged frame receiver, and thus do not meet the explicit requirements of the claims.

Moreover, col. 9, lines 41-62 merely describe software operations for controlling packet length, not for determining whether retransmission of a particular frame is needed. Also, col. 10, lines 23-30, merely describe adding header information to a packet, and not determining whether retransmission of a particular frame is needed.

For at least these additional reasons, claims 5, 12 and 19 further patentably define over *Hioe* and the rejections thereof should be withdrawn.

Hioe Does Not Disclose A Special Frames Generation Block In A Frame Transmitter As Required By Dependent Claims 7, 14 and 21

Claims 7, 14 and 21 depend from independent claims 1 and 16. These claims patentably define over *Hioe* at least by virtue of their dependence on claims 1 and 16. Moreover, each of these claims recite additional subject matter that further patentably distinguish them from *Hioe*.

The Office Action alleges that the claimed frame transmitter is allegedly met by packet processing section 210 and modulation section 203. Meanwhile, each of these claims further limit the structure of the claimed frame transmitter to even further distinguish them from *Hioe*'s structure.

Claims 7, 14 and 21 require that the frame transmitter includes a special frames generation block. The Office Action merely points to FIGs. 9A and 9B, which depict the **modulation block 203** in detail. Neither of these figures includes any element called a "special frames generation block." In fact, this would be unusual, because FIGs. 9A and 9B merely form modulated **analog waveforms** based on received data and do not generate frames at all. Accordingly, there is no evidence that *Hioe*'s modulation block 203 includes a special frames generation block, much less one that meets the explicit requirements of the claims.

For at least these additional reasons, claims 7, 14 and 21 further patentably define over *Hioe* and the rejections thereof should be withdrawn.

Hioe Does Not Disclose A Means For Generating Beacons In A Special Frames Generation Block As Required By Dependent Claims 8, 15 and 22

Claims 8, 15 and 22 depend from claims 7, 14 and 21, respectively. These claims patentably define over *Hioe* at least by virtue of their dependence on claims 7, 14 and 21.

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Moreover, each of these claims recite additional subject matter that further patentably distinguish them from *Hioe*.

The Office Action alleges that the claimed "special frames generation block" is allegedly met by unspecified portions of modulation section 203 depicted in Figures 9A and 9B. Meanwhile, each of these claims further limit the structure of the claimed frame transmitter to even further distinguish them from *Hioe*'s structure.

Specifically, claims 8, 15 and 22 further require that the special frames generation block include means for generating beacons. The Office Action apparently takes the position that this subject matter is inherent in *Hioe*'s CDMA or TDMA system. However, there is no teaching of a special frames generation block in modulation section 203 at all, much less one that includes a means for generating beacons. Accordingly, there is no evidence that *Hioe*'s modulation block 203 includes a special frames generation block, much less one that includes means for generating beacons as explicitly required by the claims.

For at least these additional reasons, claims 8, 15 and 22 further patentably define over *Hioe* and the rejections thereof should be withdrawn.

***Hioe* Does Not Disclose Hardware Operations For Formulating An Outgoing Response Frame As Required By Dependent Claim 24 and 25**

Claims 24 and 25 depend from independent claim 2, and so patentably define over *Hioe* at least by virtue of their dependence on claim 2. Moreover, these claims recite additional subject matter that further patentably distinguish them from *Hioe*.

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Specifically, claims 24 and 25 further require steps of “formulating an outgoing response frame” and “transmitting the response frame to the network.” The Office Action vaguely points to col. 7, lines 35-42 (“and thereafter”) as allegedly meeting these limitations.

However, these passages merely describe operation of control section 360 to determine line quality and transmission conditions. This is then used to adjust a transmission rate and/or error correction processing. There is no teaching or suggestion that control section 360 is able to formulate an outgoing response frame or transmit the response frame to the network, much less that these operations are implemented in hardware as required by claims 24 and 25.

For at least these additional reasons, claims 24 and 25 further patentably define over *Hioe* and the rejections thereof should be withdrawn.

Hioe Does Not Disclose Hardware Operations For Generating A Special Frame As Required By Dependent Claim 26

Claim 26 depends from claim 25, which has been shown above to patentably define over *Hioe* at least because *Hioe* does not disclose hardware operations for formulating and transmitting an outgoing response frame.

Claim 26 further requires that the hardware operations include “generating a special frame.” The Office Action merely points to FIGs. 9A and 9B, which depict the modulation block 203 in detail. Neither of these figures includes any element called a “special frames generation block.” In fact, this would be unusual, because FIGs. 9A and 9B merely form modulated analog waveforms based on received data and do not generate frames at all. Accordingly, there is no evidence that *Hioe*’s modulation block 203 includes a special frames generation block, much less one that meets the explicit requirements of the claims.

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For at least these additional reasons, claim 26 further patentably defines over *Hioe* and the rejection thereof should be withdrawn.

Hioe Does Not Disclose Hardware Operations For Generating Beacon Included In A Special Frame As Required By Dependent Claim 27

Claim 27 depends from claim 26, which has been shown above to patentably define over *Hioe* at least because *Hioe* does not disclose hardware operations for generating a special frame.

Moreover, claim 27 further requires that the hardware operation of generating a special frame includes generating a beacon. The Office Action apparently takes the position that this subject matter is inherent in *Hioe*'s CDMA or TDMA system. However, there is no teaching of a special frames generation block in modulation section 203 at all, much less one that includes a means for generating beacons. Accordingly, there is no evidence that *Hioe*'s modulation block 203 includes a special frames generation block, much less one that includes means for generating a beacon as explicitly required by the claims.

For at least these additional reasons, claim 27 further patentably defines over *Hioe* and the rejection thereof should be withdrawn.

Hioe Does Not Disclose Hardware Operations For Determining Whether Retransmission Is Needed As Required By Dependent Claim 30

Claim 30 depends from independent claim 2, and so patentably defines over *Hioe* at least by virtue of its dependence on claim 2.

Moreover, claim 30 requires that the time-critical functions implemented by hardware operations includes determining whether retransmission of a particular frame is needed.

The Office Action points to col. 9, lines 41-62, and col. 10, lines 23-30 as allegedly meeting this limitation. However, col. 9, lines 41-62 merely describe software operations for controlling packet length, not for determining whether retransmission of a particular frame is needed. Also, col. 10, lines 23-30, merely describe adding header information to a packet, and not determining whether retransmission of a particular frame is needed.

For at least these additional reasons, claim 30 further patentably defines over *Hioe* and the rejections thereof should be withdrawn.

Hioe Does Not Disclose Hardware Operations For Sending An Acknowledgement For An Anticipated Frame As Required By Dependent Claim 31

Claim 31 depends from independent claim 2, and so patentably defines over *Hioe* at least by virtue of this dependence.

Moreover, claim 31 requires that the hardware operations include determining when a frame was anticipated and sending an acknowledgement message corresponding thereto.

The Office Action points to col. 5, lines 63-66, which refer to operations of control section 204a, which includes a processor for performing software operations. Accordingly, even if, *arguendo*, these operations correspond to the claimed acknowledgement block, they are not implemented by hardware, and thus do not meet the explicit requirements of the claims.

Moreover, col. 5, lines 63-66 merely suggest sending a test signal for supervising line quality, and teaches nothing about sending an acknowledgement message corresponding to reception of an anticipated frame, as explicitly required by the claims.

For at least these additional reasons, claim 31 further patentably defines over *Hioe* and the rejection thereof should be withdrawn.

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Hioe Does Not Disclose Hardware For Implementing Functions Of A MAC Sublayer In Accordance With IEEE 802.11 As Required By Dependent Claims 32-34

Claims 32-34 depend from claims 1, 16 and 2, respectively. These claims patentably define over *Hioe* at least by virtue of their dependence on claims 1, 16 and 2.

Moreover, each of these claims require implementing certain functions of a MAC sublayer in accordance with IEEE 802.11.

The Office Action merely points to a passage in *Hioe* that refers to a CDMA method, and states that "it is inherent that the invention is compliant with IEEE 802.11." However, this ignores the requirements of the claims, which require hardware operations for implementing certain functions of a MAC sublayer in accordance with IEEE 802.11. Merely because *Hioe*'s structure can theoretically be adapted for compliance with IEEE 802.11 does not necessarily mean that *Hioe* would implement certain MAC sublayer functions of IEEE 802.11 in hardware as required by the claims. As clearly set forth in the specification at, for example, page 1, line 13 to page 3, line 7, such functions were typically implemented in software prior to the present invention.

For at least these additional reasons, claims 32-34 further patentably define over *Hioe* and the rejections thereof should be withdrawn.

Hioe Does Not Disclose Implementing All Components In A Single Integrated Circuit As Required By Dependent Claims 35-37

Claims 35-37 depend from claims 1, 16 and 2, respectively. These claims patentably define over *Hioe* at least by virtue of their dependence on claims 1, 16 and 2.

Moreover, each of these claims require implementing their enumerated elements in a single integrated circuit.

The Office Action merely points to a line in *Hioe* that suggests that the broadband radio system is a "digital system" comprising functional blocks. Nothing whatsoever discloses or suggests that the entire radio system is implemented as a single integrated circuit, much less the specifically enumerated blocks and functions explicitly required by the claims.

For at least these additional reasons, claims 35-37 further patentably define over *Hioe* and the rejections thereof should be withdrawn.

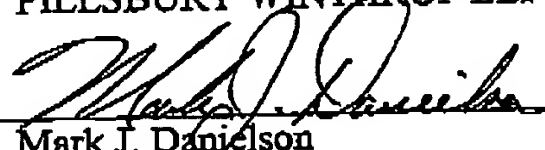
Conclusion

Applicants have amended the claims and/or described the differences between them and the cited reference. All objections and rejections having been addressed, Applicants believe the claims are now in condition for allowance, and notice thereof is earnestly solicited.

If any further questions should arise, the Examiner is respectfully invited to contact the attorney at the number set forth below.

Date: February 25, 2005

Respectfully submitted,
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